Short Question and Answers in Computer Networks

1. What is a network?

It is a set of devices connected by communication links. A node can be a computer or any other device capable of sending and/or receiving data generated by other nodes on the network

2. What is a protocol?

It is a set of rules that governs data communication.

3. What is multiplexing?

Multiplexing is the process of dividing a link, the physical medium, into logical channels for better efficiency. Here medium is not changed but it has several channels instead of one.

4. Define bandwidth?

The range of frequencies that a medium can pass is called bandwidth. It is the difference between the highest and lowest frequencies that the medium can satisfactorily pass

5. What do you mean by switching?

It is a method in which communication devices are connected to one another efficiently. A switch is intermediary hardware or software that links devices together temporarily.

6. What are the duties of data link layer?

Data link layer is responsible for carrying packets from one hop (computer or router) to the next. The duties of data link layer include packetizing, addressing, error control, flow control, medium access control.

7. What is multicast routing?

Sending a message to a group is called multicasting, and its routing algorithm is called multicast routing.

8. What is TELNET?

TELNET is a client - server application that allows a user to log on to a remote machine, giving the user access to the remote system. TELNET is an abbreviation of terminal network.

9. What do you mean by data communication?

It is the exchange of data between two devices via some form of transmission medium such as wire cable. The communicating system must be part of a communication system made up of a combination of hardware and software.The effectiveness of a data communication system depends on three fundamental characteristics: delivery, accuracy and timeliness.

10. What is point to point connection?

It provides a dedicated link between two devices. The entire capacity of the link is reserved for transmission between the two devices

11. What is subnet?

A generic term for section of a large networks usually separated by a bridge or router.

12. What is multipoint connection?

In multipoint connection more than two specific devices share a single link. Here the capacity of the channel is shared either separately or temporally.

13. What is simplex?

It is the mode of communication between two devices in which flow of data is unidirectional.

14. What is half-duplex?

It is the mode of communication between two devices in which flow of data is bidirectional but not at the same time. ie each station can transmit and receive but not at the same time.

15. What is full duplex?

It is the mode of communication between two devices in which flow of data is bidirectional and it occurs simultaneously. Here signals going in either direction share the capacity of the link.

16. What is a topology?

Topology of a network is defined as the geometric representation of the relationship of all the links and linking devices (node) to one another.

17. What is Bandwidth?

Every line has an upper limit and a lower limit on the frequency of signals it can carry. This limited range is called the bandwidth.

18. What is point-to-point protocol?

A communications protocol used to connect computers to remote networking services including Internet service providers.

19. What is switching?

Switching in data communication is of three types

Circuit switching

Packet switching

Message switching

20. What is the difference between ARP and RARP?

ARP - Address resolution protocol is used to associate the 32 bit IP address with the 48 bit physical address, used by a host or a router to find the physical address of another host on its network by sending an ARP query packet that includes the IP address of the receiver.

RARP - Reverse address resolution protocol allows a host to discover its Internet address when it knows only its physical address.

21. Compare analog and digital signals?

Analog signals can have an infinite number of values in a range but digital signal can have only a limited number of values.

22. What is ICMP?

ICMP is Internet Control Message Protocol, a network layer protocol of the TCP/IP suite used by hosts and gateways to send notification of datagram problems back to the sender.

23. What are the different types of multiplexing?

Multiplexing is of three types. Frequency division multiplexing and wave division multiplexing is for analog signals and time division multiplexing is for digital signals

24. What do you mean by switching?

It is a method in which communication devices are connected to one another efficiently.A switch is intermediary hardware or software that links devices together temporarily.

25. What do you mean by flow control?

It is the regulation of sender's data rate so that the receiver buffer doesn't become overwhelmed.i.e. flow control refers to a set of procedures used to restrict the amount of data that the sender can send before waiting for acknowledgement.

26. What is multicast routing?

Sending a message to a group is called multicasting, and its routing algorithm is called multicast routing

27. What is IP address?

The internet address (IP address) is 32bits that uniquely and universally defines a host or router on the internet.The portion of the IP address that identifies the network is called netid. The portion of the IP address t hat identifies the host or router on the network is called hostid

28. What do you mean by subnetting?

Subnetting divides one large network into several smaller ones. It adds an intermediate level of hierarchy in IP addressing.

29. What is Repeaters?

A receiver receives a signal before it becomes too weak or corrupted, regenerates the original bit pattern, sand puts the refreshed copy back onto the link. It operates on physical layer of OSI model.

30. What is Bridges?

They divide large network into smaller components.They can relay frames between two originally separated LANs. They provide security through partitioning traffic. They operate on physical and data link layer of OSI model.

31. What is Gateway?

It is a protocol converter.A gateway can accept a packet formatted for one protocol and convert it to a packet formatted for another protocol. It operates on all the seven layers of OSI model.

32. What do you mean by peer?

Entities comprising the corresponding layers on different machines are called peers

33. What do you mean by broadcasting?

Broadcast system allows addressing a packet to all destinations by using a special code in address field. When packet is transmitted it is received and processed by every machine on the network.

34. What is source route?

It is a sequence of IP addresses identifying the route a datagram must follow. A source route may optionally be included in an IP datagram header.

35. What are major types of networks?

Server-based network

Peer-to-peer network

36. What are the protocols in application layer?

The protocols defined in application layer are

TELNET

FTP

SMTP

SMTP

37. What do you mean by point to point network?

Point to point network consist of many connections between individual pair of machines. Large networks are point to point.Routing algorithm plays an important in point to point network.It uses stored ad forward technique. It is a packet switching network

38. Define Retransmission?

Retransmission is a technique in which the receiver detects the occurrence of an error and asks the sender to resend the message. Resending is repeated until a message arrives that the receiver believes is error-freed.

39. What are the protocols in transport layer?

The protocols defined in transport layer are:

TCP

UDP

40. Define TCP?

It is connection oriented protocol.It consist byte streams originating on one machine to be delivered without error on any other machine in the network. While transmitting it fragments the stream to discrete messages and passes to internet layer.At the destination it reassembles the messages into output stream.

41. What is URL?

It is a standard for specifying any kind of information on the World Wide Web.

42. Define UDP?

It is unreliable connectionless protocol.It is used for one-shot,client-server type,request reply queries and applications in which prompt delivery is required than accuracy.

43. What is World Wide Web?

World Wide Web is a repository of information spread all over the world and linked together.It is a unique combination of flexibility,portability,and user-friendly features .The World Wide Web today is a distributed client-server service,in which a client using a browser can access a service using a server.The service provided is distributed over many locations called web sites.

44. What is Hypertext Transfer Protocol (HTTP)?

It is the main protocol used to access data on the World Wide Web .the protocol transfers data in the form of plain text,hypertext,audio,video,and so on. It is so called because its efficiency allows its use in a hypertext environment where there are rapid jumps from one document to another.

45. What do you mean by Simple Mail Transfer Protocol?

The TCP/IP protocol that supports electronic mail on the internet is called Simple Mail Transfer Protocol.SMTP provides for mail exchange between users on the same or different computer and supports Sending a single message to one or more recipient Sending message that include text, voice,video,or graphics.Sending message to users on network outside the internet.

46. What do you mean by local login and remote login?

When a user logs into a local time-sharing system, it is called local login. When a user wants to access an application program or utility located on a remote machine, he or she performs remote login.

47. What is a Link?

A link refers to the connectivity between two devices. It includes the type of cables andprotocols used in order for one device to be able to communicate with the other.

48. What are the layers of the OSI reference model?

There are 7 OSI layers: Physical Layer, Data Link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer and Application Layer.

49. What is backbone network?

A backbone network is a centralized infrastructure that is designed to distribute different routes and data to various networks. It also handles management of bandwidth and various channels.

50. What is a LAN?

LAN is short for Local Area Network. It refers to the connection between computers and other network devices that are located within a small physical location.

51. What is a node?

A node refers to a point or joint where a connection takes place. It can be computer or device that is part of a network. Two or more nodes are needed in order to form a network connection.

52. What are routers?

Routers can connect two or more network segments. These are intelligent network devices that store information in its routing table such as paths, hops and bottlenecks. With this info, they are able to determine the best path for data transfer. Routers operate at the OSI Network Layer.

53. What is point to point link?

It refers to a direct connection between two computers on a network. A point to point connection does not need any other network devices other than connecting a cable to the NIC cards of both computers.

54. What is anonymous FTP?

Anonymous FTP is a way of granting user access to files in public servers. Users that are allowed accesses to data in these servers do not need to identify themselves, but instead log in as an anonymous guest.

55. What is subnet mask?

A subnet mask is combined with an IP address in order to identify two parts: the extendednetwork address and the host address. Like an IP address, a subnet mask is made up of 32bits.

56. What is the maximum length allowed for a UTP cable?

A single segment of UTP cable has an allowable length of 90 to 100 meters. This limitation can be overcome by using repeaters and switches.

57. What is data encapsulation?

Data encapsulation is the process of breaking down information into smaller manageablechunks before it is transmitted across the network. It is also in this process that the source anddestination addresses are attached into the headers, along with parity checks.

58. Describe Network Topology

Network Topology refers to the layout of a computer network. It shows how devices and cables are physically laid out, as well as how they connect to one another.

59. What is VPN?

VPN means Virtual Private Network, a technology that allows a secure tunnel to be createdacross a network such as the Internet. For example, VPNs allow you to establish a secure dialup connection to a remote server.

60. Briefly describe NAT.

NAT is Network Address Translation. This is a protocol that provides a way for multiplecomputers on a common network to share single connection to the Internet.

61. What is the job of the Network Layer under the OSI reference model?

The Network layer is responsible for data routing, packet switching and control of networkcongestion. Routers operate under this layer.

62. How does a network topology affect your decision in setting up a network?

Network topology dictates what media you must use to interconnect devices. It also serves as basis on what materials, connector and terminations that is applicable for the setup.

63. What is RIP?

RIP, short for Routing Information Protocol is used by routers to send data from one network to another. It efficiently manages routing data by broadcasting its routing table to all other routers within the network. It determines the network distance in units of hops.

64. What are different ways of securing a computer network?

There are several ways to do this. Install reliable and updated anti-virus program on all computers. Make sure firewalls are setup and configured properly. User authentication will also help a lot. All of these combined would make a highly secured network.

65. What is NIC?

NIC is short for Network Interface Card. This is a peripheral card that is attached to a PC inorder to connect to a network. Every NIC has its own MAC address that identifies the PC on the network.

66. What is WAN?

WAN stands for Wide Area Network. It is an interconnection of computers and devices that are geographically dispersed. It connects networks that are located in different regions and countries.

67. What is the importance of the OSI Physical Layer?

The physical layer does the conversion from data bits to electrical signal, and vice versa. This is where network devices and cable types are considered and setup.

68. How many layers are there under TCP/IP?

There are four layers: the Network Layer, Internet Layer, Transport Layer and Application Layer.

69. What are proxy servers and how do they protect computer networks?

Proxy servers primarily prevent external users who identifying the IP addresses of an internalnetwork. Without knowledge of the correct IP address, even the physical location of the network cannot be identified. Proxy servers can make a network virtually invisible to external users.

70. What is the function of the OSI Session Layer?

This layer provides the protocols and means for two devices on the network to communicate with each other by holding a session. This includes setting up the session, managing information exchange during the session, and tear-down process upon termination of the session.

71. What is a private IP address?

Private IP addresses are assigned for use on intranets. These addresses are used for internalnetworks and are not routable on external public networks. These ensures that no conflicts are present among internal networks while at the same time the same range of private IP addresses are reusable for multiple intranets since they do not "see" each other.

72. What is OSI and what role does it play in computer networks?

OSI (Open Systems Interconnect) serves as a reference model for data communication. It ismade up of 7 layers, with each layer defining a particular aspect on how network devices connect and communicate with one another. One layer may deal with the physical media used, while another layer dictates how data is actually transmitted across the network.

73. What is the purpose of cables being shielded and having twisted pairs?

The main purpose of this is to prevent crosstalk. Crosstalks are electromagnetic interferences or noise that can affect data being transmitted across cables.

74. What is the advantage of address sharing?

By using address translation instead of routing, address sharing provides an inherent securitybenefit. That's because host PCs on the Internet can only see the public IP address of the external interface on the computer that provides address translation and not the private IP addresses on the internal network.

75. What are MAC addresses?

MAC, or Media Access Control, uniquely identifies a device on the network. It is also known as physical address or Ethernet address. A MAC address is made up of 6-byte parts.

76. **What is the equivalent layer or layers of the TCP/IP Application layer in terms of OSI reference model?**

The TCP/IP Application layer actually has three counterparts on the OSI model: the Sessionlayer, Presentation Layer and Application Layer.

79. How can you identify the IP class of a given IP address?

By looking at the first octet of any given IP address, you can identify whether it's Class A, B or C. If the first octet begins with a 0 bit, that address is Class A. If it begins with bits 10 then that address is a Class B address. If it begins with 110, then it's a Class C network

80. Describe star topology

Star topology consists of a central hub that connects to nodes. This is one of the easiest tosetup and maintain.

81. What are gateways?

Gateways provide connectivity between two or more network segments. It is usually a computer that runs the gateway software and provides translation services. This translation is a key in allowing different systems to communicate on the network.

82. What is the disadvantage of a star topology?

One major disadvantage of star topology is that once the central hub or switch get damaged,the entire network becomes unusable.

83. Give some examples of private network addresses.

10.0.0.0 with a subnet mask of 255.0.0.0

172.16.0.0 with subnet mask of 255.240.0.0

192.168.0.0 with subnet mask of 255.255.0.0

84. What is tracert?

Tracert is a Windows utility program that can used to trace the route taken by data from therouter to the destination network. It also shows the number of hops taken during the entire transmission route.

85. What are the functions of a network administrator?

A network administrator has many responsibilities that can be summarize into 3 key functions: installation of a network, configuration of network settings, and maintenance/troubleshooting of networks.

86. Describe at one disadvantage of a peer to peer network.

When you are accessing the resources that are shared by one of the workstations on thenetwork, that workstation takes a performance hit.

87. What is Hybrid Network?

A hybrid network is a network setup that makes use of both client-server and peer-to-peerarchitecture.

88. What is DHCP?

DHCP is short for Dynamic Host Configuration Protocol. Its main task is to automatically assign an IP address to devices across the network. It first checks for the next available address not yet taken by any device, then assigns this to a network device.

89. What is the main job of the ARP?

The main task of ARP or Address Resolution Protocol is to map a known IP address to a MAClayer address.

90. What is TCP/IP?

TCP/IP is short for Transmission Control Protocol / Internet Protocol. This is a set of protocollayers that is designed to make data exchange possible on different types of computer networks, also known as heterogeneous network.

91. How can you manage a network using a router?

Routers have built in console that lets you configure different settings, like security and datalogging. You can assign restrictions to computers, such as what resources it is allowed access, or what particular time of the day they can browse the internet. You can even put restrictions on what websites are not viewable across the entire network.

92. What protocol can be applied when you want to transfer files between differentplatforms, such between UNIX systems and Windows servers?

Use FTP (File Transfer Protocol) for file transfers between such different servers. This ispossible because FTP is platform independent.

93. What is the use of a default gateway?

Default gateways provide means for the local networks to connect to the external network. Thedefault gateway for connecting to the external network is usually the address of the external router port.

94. One way of securing a network is through the use of passwords. What can beconsidered as good passwords?

Good passwords are made up of not just letters, but by combining letters and numbers. Apassword that combines uppercase and lowercase letters is favourable than one that uses all upper case or all lower case letters. Passwords must be not words that can easily be guessedby hackers, such as dates, names, favourites, etc. Longer passwords are also better than short ones

95. What is Ping?

Ping is a utility program that allows you to check connectivity between network devices on thenetwork. You can ping a device by using its IP address or device name, such as a computer name

96. What is DNS?

DNS is Domain Name System. The main function of this network service is to provide hostnames to TCP/IP address resolution.

97. What advantages does fiber optics have over other media?

One major advantage of fiber optics is that is it less susceptible to electrical interference. It alsosupports higher bandwidth, meaning more data can be transmitted and received. Signal degrading is also very minimal over long distances.

98. What is the difference between a hub and a switch?

A hub acts as a multiport repeater. However, as more and more devices connect to it, it wouldnot be able to efficiently manage the volume of traffic that passes through it. A switch provides a better alternative that can improve the performance especially when high traffic volume is expected across all ports.

99. What is the standard colour sequence of a straight-through cable?

Orange/white, orange, green/white, blue, blue/white, green, brown/white, brown.

100. What protocols fall under the Application layer of the TCP/IP stack?

The following are the protocols under TCP/IP Application layer: FTP, TFTP, Telnet and SMTP.

101. You need to connect two computers for file sharing. Is it possible to do this withoutusing a hub or router?

Yes, you can connect two computers together using only one cable. A crossover type cable canbe used in this scenario. In this setup, the data transmit pin of one cable is connected to the data receive pin of the other cable, and vice versa.

102. What is ipconfig?

Ipconfig is a utility program that is commonly used to identify the addresses information of acomputer on a network. It can show the physical address as well as the IP address.

103. What is the difference between a straight-through and crossover cable?

A straight-through cable is used to connect computers to a switch, hub or router. A crossovercable is used to connect two similar devices together, such as a PC to PC or Hub to hub.

104. What is client/server?

Client/server is a type of network wherein one or more computers act as servers. Serversprovide a centralized repository of resources such as printers and files. Clients refers to workstation that access the server.

105. Describe networking.

Networking refers to the inter connection between computers and peripherals for datacommunication. Networking can be done using wired cabling or through wireless link.

106. Describe Ethernet.

Ethernet is one of the popular networking technologies used these days. It was developedduring the early 1970s and is based on specifications as stated in the IEEE. Ethernet is used in local area networks.

107. What are some drawbacks of implementing a ring topology?

In case one workstation on the network suffers a malfunction, it can bring down the entirenetwork. Another drawback is that when there are adjustments and reconfigurations needed to be performed on a particular part of the network, the entire network has to be temporarily brought down as well.

108. What is the difference between CSMA/CD and CSMA/CA?

CSMA/CD, or Collision Detect, retransmits data frames whenever a collision occurred.
CSMA/CA, or Collision Avoidance, will first broadcast intent to send prior to data transmission.

109. What is SMTP?

SMTP is short for Simple Mail Transfer Protocol. This protocol deals with all Internal mail, andprovides the necessary mail delivery services on the TCP/IP protocol stack.

110. What is multicast routing?

Multicast routing is a targeted form of broadcasting that sends message to a selected group ofuser, instead of sending it to all users on a subnet.